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IN THE SUPERIOR COURT OF THE STATE OF ARIZONA

IN AND FOR THE COUNTY OF YAVAPAI

STATE OF ARIZONA,

Plaintiff,

vs.

STEVEN CARROLL DEMOCKER,

Defendant.

) No. P1300CR20081339

) Div. 6

) **MOTION TO PRECLUDE**
) **TESTIMONY OF EXPERTS**
) **PURSUANT TO ARIZONA RULE**
) **OF EVIDENCE 702**

) **(Oral Argument Requested)**

Defendant Steven DeMocker hereby moves to preclude the testimony of the State's bicycle tire and shoe print impression witnesses and experts, John B. Hoang, Sergeant D. Winslow, Detective T. Kennedy, Commander S. Mascher, and Eric Gilkerson. This motion is supported by the following Memorandum of Points and Authorities.

SUPERIOR COURT
YAVAPAI COUNTY, ARIZONA
2010 APR -9 PM 3:05
JEANNE HICKS, CLERK
S. KELBAUGH
BY: _____

Memorandum of Points and Authorities

I. The National Academy of Sciences and judicial oversight of forensic evidence

There can now be no doubt about the need for focused judicial oversight of so-called forensic evidence offered in criminal cases. Recent studies have highlighted the absolute necessity of increased judicial oversight in admitting testimony once thought reflexively to be always admissible. Peter J. Neufeld, one of the founders of the Innocence Project in New York, collaborated on a study that is now often cited when judges, lawyers and forensic scientists gather to address this topic. This remarkable study looked at 156 cases of exonerees in which forensic testimony had been offered at trial by the prosecution in support of the guilt of the eventually exonerated defendant. In 60% of these cases, the forensic analysts called by the prosecution provided invalid testimony. Brandon L. Garret & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 Virginia L. Rev. 1 (2009). According to the authors, "the adversarial process largely failed to police this invalid testimony." *Id.* Similarly, in another study regarding forensic expert opinion testimony, the authors recognized that with the exception of DNA typing, "virtually all areas of forensic identification lack empirically and statistically meaningful measures of probability." Dawn McQuiston-Surrett & Michael J. Saks, *Communicating Opinion Evidence in the Forensic Identification Sciences: Accuracy and Impact*, 59 Hastings L.J. 1159, 1159 (2008). Not surprisingly, both Professors McQuiston and Saks are faculty members associated with Arizona State University. Arizona's academic community has been among the most engaged in the country on these issues of forensic failure and the need for reform.

In early 2009, the National Academy of Sciences released a study that revolutionized the modern view of forensic science. The National Academy of Sciences was directed by Congress to undertake the study of the question whether significant

1 improvements are needed in forensic science. Scholars from the legal and scientific
2 communities heard evidence from federal agency officials, academics, federal, state and
3 local law enforcement officials, medical examiners, a coroner, crime laboratory officials,
4 independent investigators and defense attorneys, forensic science practitioners and
5 leaders of professional organizations. In 2009, after over two and half years of study and
6 research, the National Academy released an exhaustive and fully documented report
7 entitled "Strengthening Forensic Science in the United States: A Path Forward."
8 National Research Council, Strengthening Forensic Science in the United States (The
9 National Academies Press 2009) (hereafter the "NAS Report") (hereafter the "NAS
10 Report").

11 The Report details serious flaws in the scientific reliability and reporting of
12 forensic testing and suggests sweeping reform. The Report states that "if the scientific
13 evidence carries a false sense of significance ... the jury or court can be misled, and this
14 could lead to wrongful conviction or exoneration. If juries lose confidence in the
15 reliability of forensic testimony, valid evidence might be discounted, and some innocent
16 persons might be convicted or guilty individuals acquitted." See NAS Report at 37. The
17 Report casts serious doubt on many common place types of forensic science testimony –
18 especially what might commonly be called comparison evidence.

19 The Report identifies several requirements of good science and reviews the
20 practices of different fields of forensic science with respect to those requirements.
21 Across the spectrum of non-DNA forensic identification techniques, the Report identifies
22 serious issues including:

- 23 (1) Inadequate or no research regarding base rates, error rates, measurement error
24 rates, or minimizing the risk of bias in forensic testing;
- 25 (2) Inadequate or no standards in determining a match, in forensic terminology, in
26 report writing, and in forensic science education;

- 1 (3) The lack of mandatory certification for forensic examiners and the lack of
2 proficiency testing; and
3 (4) Inadequate funding.

4 The Report concludes:

5 Too often [forensic science practitioners] have inadequate educational
6 programs, and they typically lack mandatory and enforceable
7 standards, founded on rigorous research and testing, certification
8 requirements, and accreditation programs. Additionally, forensic
9 science and forensic pathology research, education and training lack
10 strong ties to our research universities and national science assets.

11 *Id.* at 14.

12 Reaction to the NAS Report has been dramatic within both the legal and forensic
13 scientific communities. The Report has grabbed the attention of both academics and
14 practitioners. The issuance of the Report was followed almost immediately by a widely
15 attended Conference held at the Arizona State University College of Law on April 1-3,
16 2009. Over 30 speakers addressed the concerns identified by the NAS Report. Included
17 among those speakers were Arizona Supreme Court Justice Scott Bales, members of the
18 NAS Committee, law enforcement leaders, and representatives of crime laboratories both
19 nationally and in Arizona. The keynote speaker at that Conference was the Honorable
20 Harry T. Edwards from the United States Court of Appeals for the D.C. Circuit—he was
21 one of the co-chairs of the NAS Committee and was able to bring a particular focus of the
22 judicial community to the concerns expressed by scientists about the lack of an empirical
23 basis in much of what has been labeled as forensic science in criminal cases. (A copy of
24 his remarks is attached as Exhibit A.) Judge Edwards gave a very candid assessment of
25 how his views of forensic science, as a federal judge with nearly 30 years on the bench,
26 were changed by his service on the NAS Committee:

27 I started this project with no preconceived views about the forensic
28 science community. Rather, I simply assumed, as I suspect many of
my judicial colleagues do, that forensic science disciplines typically are
well-grounded in scientific methodology and that crime laboratories

1 and forensic science practitioners follow proven practices that ensure
2 the validity and reliability of forensic evidence offered in court. I was
3 surprisingly mistaken in what I assumed. The truth is that the manner
4 in which forensic evidence is presented on television – as invariably
valid and reliable – does not correspond with reality.

5 Exhibit A at 2.

6 Shortly after this Conference, Arizona State University Professor Michael Saks,
7 who had also spoken at the Conference, published a cover article entitled “The Past and
8 Future of Forensic Science and the Courts” in the November-December 2009 issue of
9 *Judicature*, the Journal of the American Judicature Society. His article, joining voice
10 with others in the academic and judicial communities, focuses on the historical lack of
11 judicial focus on evidence once thought to be admissible without question. Michael J.
12 Saks, *The Past and Future of Forensic Science and the Courts*, 93 *Judicature* 94, 94-101
13 (2009).

14 Courts have begun to recognize the significance of the NAS Report’s findings. In
15 *Melendez-Diaz v. Massachusetts*, the United States Supreme Court held that an analyst’s
16 affidavit stating that proper scientific procedures were followed during forensic analysis
17 could not survive a challenge under the Confrontation Clause. In reaching this
18 conclusion, the Court cited the NAS Report with approval and recognized that the
19 forensic sciences are fraught with inaccuracies and deficiencies. *Melendez-Diaz v.*
20 *Massachusetts*, 129 S. Ct. 2527, 2536-37 (2009). The Court concluded its discussion
21 with a quote from the NAS Report: “The forensic science system, encompassing both
22 research and practice, has serious problems that can only be addressed by a national
23 commitment to overhaul the current structure that supports the forensic science
24 community in this country.” *Id.*

25 Likewise, Judge Nancy Gertner of the United States District Court for the District
26 of Massachusetts has been among the first to order the reevaluation of the courts’
27 approach to forensic evidence following the NAS Report. On March 8, 2010, Judge
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1 Gertner issued an order indicating that, although forensic evidence has long been
2 presumed admissible because of its pedigree, she will now carefully examine this
3 evidence in each case in light of the concerns outlined in the NAS Report. *See Exhibit B.*

4 Despite the importance of the Report, many in the judiciary in the United States
5 may still be unaware of it. A recent judicial survey undertaken in Texas reported startling
6 results with regards to judges' familiarity with the Report. The survey found that most
7 judges in that State were unaware of both the existence and significance of the Report.
8 Over 60% of the judges polled had never even heard of the NAS Report and more than
9 80% had never read any portion of the report. In fact, out of 156 judges who responded,
10 only one judge had read the entire report. While this may explain the reluctance on the
11 part of some judges to reconsider the role of forensic science in the courtroom, it must
12 also be observed that lawyers who represent criminal defendants as well as those who
13 prosecute those cases are themselves responsible at least in part for the failure of more
14 judges to appreciate the seriousness of problems identified by the National Academy's
15 Committee.

16 The National Academy of Sciences Report acknowledges that unreliable forensic
17 evidence and exaggerated forensic testimony have contributed to a significant number of
18 wrongful convictions. The Report decries "the potential danger of giving undue weight
19 to evidence and testimony derived from imperfect testing and analysis." NAS Report at
20 4. This risk is especially grave in cases in which the prosecution seeks to introduce
21 testimony with respect to comparison evidence and empirically untested assumptions
22 about crime scene evaluation. In this death penalty case we have exactly that situation
23 with respect to the shoe and tire print evidence.¹

24
25 ¹ Until yesterday, we also had expected that the State might attempt to introduce "blood spatter"
26 expert testimony through Rod Englert. The State has disclosed that it now intends not to call
27 Englert as a witness and the State has not timely disclosed any other expert on this topic. We
28 will, therefore, limit this motion to the bike and shoeprint testimony, but much of what we argue
might have been relevant if the State had identified a "blood spatter" expert.

1 The Court should preclude the testimony of the State's bicycle tire and shoe print
2 impression witnesses and experts, John B. Hoang, Sergeant D. Winslow, Detective T.
3 Kennedy, Commander S. Mascher, and Eric Gilkerson. The subject matter of these
4 witnesses' testimony arises in the heartland of the areas in which errors and absence of
5 sufficiently rigorous testing and scientific support have been identified. NAS Report at
6 145-50. There is a very serious risk that jurors will not be able to understand the limited
7 reliability of this evidence. This motion is supported by the Due Process, Confrontation,
8 and Eighth Amendment Clauses of the United States Constitution and counterparts in the
9 Arizona Constitution, Arizona Rules of Evidence, and the Arizona Rules of Criminal
10 Procedure.

11 **II. Impression Evidence**

12 The Court has already heard a great deal of testimony and argument about the
13 testimony the State wishes to offer in this field. At this stage, the State has noticed the
14 following experts and witnesses to testify regarding shoe print and tire track impression
15 evidence: Sergeant D. Winslow, Detective T. Kennedy, Commander S. Mascher², John
16 B. Hoang, and Eric Gilkerson. The State intends to offer "lay" witness testimony that tire
17 tracks found behind the victim's house were "similar" to tire tread patterns made when
18 Mr. DeMocker's bike was rolled in the same type of sand and that shoe prints that left the
19 victim's residence and returned were similar to the soles of the victim's shoes. The State
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21 ² On March 17, 2010, the State produced a supplemental report from Commander Scott
22 Mascher. Based on the disclosure, Cmdr. Mascher now appears to be making precisely the kind
23 of comparisons that the State previously acknowledged he was not qualified to make, and that he
24 has not been offered as an expert to make. Cmdr. Mascher is not disclosed as a shoe print
25 identification expert. When Cmdr. Mascher was disclosed as an expert, Deputy County Attorney
26 Joe Butner explained to the Court that Cmdr. Mascher was not a shoe print identification expert.
27 "[T]racking is to be distinguished from shoeprint identification. Okay?" Mr. Butner explained
28 that Detective Kennedy and Cmdr. Mascher would be testifying about tracking and would not be
testifying about the identity of the shoe versus a shoe that was discovered. Mr. Butner advised
the Court and counsel again on April 7, 2010 that he was not going to be asking these witnesses
about the identity of these shoe prints.

1 also wants to introduce expert testimony that the shoe prints found at the crime scene
2 match or are similar to tread patterns produced by La Sportiva Pike's Peak shoes and that
3 Mr. DeMocker purchased a pair of such shoes in April of 2006.

4 **A. Winslow, Kennedy, and Mascher do not qualify as lay witnesses**
5 **pursuant to Rule 701**

6 This Court previously indicated that Winslow, Kennedy, and Mascher might be
7 permitted to testify as lay witnesses as to the similarity of tire tracks and shoe prints to
8 those made by defendant's tires and shoes. The Court's observations in this regard have
9 attempted to clarify what opinions may and may not be offered by lay witnesses. "So,
10 and maybe it's a fine line that I'm drawing, but I think that you can have 701 testimony
11 from officers and other lay people who observed whatever it is that they observed and
12 can tell the jury about what they perceive. But I don't think that you can draw
13 conclusions about identity or matches or other things in the same vein that require
14 specialized training and expertise, and I think it ultimately comes down to the, to some
15 extent, the fact that you can't have definitive conclusions based on lay people saying
16 what they saw." (1/12/2010 Transcript). "I think that Amayaruiz [sic] still with -- still
17 stands for the proposition that one must be very careful with the nature of testimony
18 that has been presented that to allow the officer to testify that the tracks appeared
19 identical or provided a match would be improper and I'm going to preclude that. To talk
20 about the observations that they were similarities between what was rolled from a tire
21 versus what was found in the dirt on the ground I think is permissible under Amayaruiz
22 [sic] which is helpful too in understanding what was being observed by the percipient
23 witness, but I will preclude the use of terms that add the level of certainty that I think is
24 prohibited except through an expert such as match or identical." (1/14/2010 Transcript).
25 "[I]f she says something is similar, one to the other, and here's why, because they had the
26 Z pattern on the prints, the Z pattern on the shoe, I think that is observational, and I think
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1 that that's permissible, and I don't think you need to qualify her as an expert to testify to
2 that." (2/19/2010 Transcript).

3 As the Court correctly noted, the line here may be a "fine" one. Rule 701 is not a
4 tool for the prosecution to bypass the requirements for the admissibility of expert
5 testimony. Permitting this testimony, however, without further clarification may well
6 contravene the critical distinction between Rules 701 and 702. Previously this Court
7 distinguished between testimony which identifies a "match" and testimony which
8 identifies a similarity; indicating it would prohibit the former and permit the latter.³ The
9 real distinction, however, lies in the basis for the testimony.

10 The New Wigmore, a leading treatise on evidence, clarifies that the proper
11 interpretation of Rule 701 does "not permit a lay witness to express an opinion as to
12 matters which are beyond the realm of common experience and which require the special
13 skill and knowledge of an expert witness." David H. Kaye et al., *The New Wigmore, A*
14 *Treatise on Evidence: Expert Evidence* § 1.7 at 40. Testimony only qualifies as lay
15 testimony "if the average person, having been in the same position as the witness, could
16 provide the testimony." *Id.* "Application of specialized knowledge from whatever
17 source" transforms the testimony into that of an expert. *Id.*

18 Many cases support this position. For example, in deciding that police officers
19 could not offer lay testimony that the defendant's conduct was similar to that of an
20 experienced drug trafficker, the Ninth Circuit held that this testimony was based on the

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22 ³ It is also noteworthy that while the distinction between testimony that two prints match and
23 testimony that two prints are similar may seem significant to those familiar with this type of
24 forensic testimony, one recent study conducted in the context of microscopic hair analysis found
25 that jurors view both terms to be similarly probative. Dawn McQuiston-Surrett & Michael J.
26 Saks, *Communicating Opinion Evidence in the Forensic Identification Sciences: Accuracy and*
27 *Impact*, 59 *Hastings L.J.* 1159, (2008). In fact, participants viewed expert testimony presented as
28 "similar-in-all-microscopic-characteristics" (68%) as slightly more probative than defendant was
the source of the crime scene hair than expert testimony presented as a "match" (66%). *Id.* at
1165.

1 perceptions, education, training, and experience of the witness and, therefore, constituted
2 expert testimony. *United States v. Figueroa-Lopez*, 125 F.3d 1241, 1246 (9th Cir. 1997).
3 The Court found that this testimony “requires precisely the type of ‘specialized
4 knowledge’ of law enforcement governed by Rule 702.” *Id.* In conclusion, the court
5 reminded the judiciary that “[a]s judges who have heard such testimony many times, we
6 must not forget that our familiarity with it does not bring it within Rule 701.” *Id.*

7 When faced with this issue, the Eighth Circuit took a similar approach. The
8 Eighth Circuit refused to characterize an officer’s testimony interpreting a conversation
9 between defendants as lay testimony. The Court held that the officer’s testimony
10 constituted expert testimony rather than lay testimony because “[l]ay opinion testimony is
11 admissible only to help the jury or the court to understand the facts about which the
12 witness is testifying and not to provide specialized explanations or interpretations that an
13 untrained layman could not make if perceiving the same acts or events.” *United States v.*
14 *Peoples*, 250 F.3d 630, 641 (8th Cir. 2001) (citing *United States v. Cortez*, 935 F.2d 135,
15 139-40 (8th Cir.1991); *United States v. Figueroa-Lopez*, 125 F.3d 1241, 1244-45 (9th
16 Cir.1997)). The Court cautioned that “[w]hat is essentially expert testimony [] may not
17 be admitted under the guise of lay opinions.” *Id.* Similarly, the Supreme Court of
18 Colorado followed the reasoning of the Eighth, Ninth, and Eleventh Circuits and held that
19 where “an officer’s testimony is based not only on her perceptions and observations of the
20 crime scene, but also on her specialized training or education, she must be properly
21 qualified as an expert before offering testimony that amounts to expert testimony.”
22 *People v. Stewart*, 55 P.3d 107, 124 (Colo. 2002).

23 The State seeks to introduce police officer testimony based upon the specialized
24 experience acquired by these officers through their law enforcement work. Because an
25 average untrained lay person would not share this experience, the officers’ testimony
26 constitutes expert testimony. We ask for these reasons that the Court clarify the limits of
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1 its rulings with respect to the scope of Rule 701 and that it require the State qualify the
2 officers as experts if it wishers to present their testimony on these subjects of impression
3 evidence to the jury.

4 **B. Impression Evidence does not meet *Frye* standard**

5 Arizona courts have heretofore held that expert comparison of shoe prints to a
6 defendant's shoes does not involve scientific methods or tools and, therefore, does not
7 require any analysis under *Frye*. See *State v. Murray*, 184 Ariz. 9, 29 (Ariz. 1995) (en
8 banc); *State v. Dixon*, 153 Ariz. 151, 155 (Ariz. 1987) (en banc); *State v. Richards*, 166
9 Ariz. 576, 578 (Ariz. App. 1991). This assumption is incorrect and must be reevaluated.
10 The NAS Report treats impression evidence as a distinct discipline of forensic science
11 and analyzes it as such.

12 Arizona applies the *Frye* standard in ruling on the admissibility of scientific
13 evidence. See *State v. Bible*, 175 Ariz. 549, 580, 858 P.2d 1152, 1183 (1993) (citing
14 *United States v. Frye*, 293 F. 1013 (D.C. Cir. 1923). Three conditions must be satisfied
15 for the receipt of such evidence. The proponent must first demonstrate that the principles
16 being applied are "generally accepted in the relevant scientific community." *Bible*, 175
17 Ariz. at 578, 858 P.2d at 1181. The court must also decide the general acceptance of the
18 techniques being used in the application of such principles. *State v. Tankersley*, 191 Ariz.
19 359, 364-65, 956 P.2d 486, 491-92 (1998). Finally there needs to be a foundational
20 showing that correct procedures were followed in a given case. *Bible*, 175 Ariz. at 580-
21 81, 858 P.2d at 1183-84.

22 *Frye* requires that scientific evidence be generally accepted by the scientific
23 community. The NAS Report demonstrates that impression evidence no longer merits
24 the deference it has historically received because impression evidence is no longer
25 generally accepted by the scientific community. As with blood spatter, impression
26 evidence suffers from the same widely varying level of education among "experts" as
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1 well as the difficulty inherent in the fact that identification is a highly subjective process.
2 NAS Report at 146. There is no defined threshold that must be surpassed in order to
3 register an identification, nor are there any studies that associate the number of matching
4 characteristics with the probability that the impressions were made by a common source.
5 *Id.* at 147. In addition, although the IAI has a certification program, the course of study
6 does not require an understanding of the scientific basis of the examinations, nor does it
7 recommend the use of the scientific method. *Id.* at 148. Furthermore, the IAI does not
8 recommend proficiency testing or continuing education. *Id.*

9 Until the fields of shoe print and tire track analysis are subjected to rigorous
10 scientific study and uniform educational requirements, and until the State can
11 demonstrate that its experts are sufficiently qualified, the Court should exclude the
12 testimony of John B. Hoang, Sergeant D. Winslow, Detective T. Kennedy, Commander
13 S. Mascher, and Eric Gilkerson on these issues or in the alternative conduct a hearing to
14 ascertain the reliability of their testimony.

15 **C. *Frye's* Constitutionality**

16 If the Court finds this type of comparison testimony is admissible pursuant to
17 *Frye*, the defense urges the Court to reject the *Frye* test as an unconstitutional standard
18 for reviewing expert testimony. Other courts and commentators have vocally recognized
19 that the *Logerquist* opinion affirming *Frye* was wrongly decided and should be reversed.
20 In dissent to the *Logerquist* opinion, Justice Martone recognized that judges play a
21 valuable role in preventing the abuse of expert testimony and excluding junk science.
22 *Logerquist v. McVey*, 196 Ariz. 470, 493 (2000). Similarly, dissenting Justice McGregor
23 stated she did not think that “allowing a jury to hear unreliable, invalid “expert” evidence
24 benefits either our judicial system or the litigants.” *Id.* at 499. In commenting on
25 *Logerquist's* “widely asserted flaws,” the Arizona Court of Appeals noted that the
26 decision prevents a court from ever making a determination on whether the offered
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1 "inductive reasoning" based on experience, observation, or research is generally accepted
2 by the scientific community. *Lohmeier v. Hammer*, 214 Ariz. 57, 70 (Ariz. App. 2006).
3 Instead, this burden is placed upon a jury of lay men and women. *Id.* Because this task is
4 foisted upon the jury, inefficiencies are exacerbated and there is a very real risk that
5 jurors will be tainted by exposure to invalid scientific evidence, even if they ultimately
6 decide to reject the evidence. *Id.* at 71. Expert scientific testimony in a criminal case
7 must be subject to a heightened standard of reliability in order to satisfy the Due Process,
8 Confrontation, and Eighth Amendment Clauses of the United States Constitution as well
9 as counterparts in the Arizona Constitution, Arizona Rules of Evidence, and Arizona
10 Rules of Criminal Procedure. Criminal cases require a heightened standard of proof in
11 general and this applies with even greater force to death penalty cases.

12 "[T]he penalty of death is qualitatively different from a sentence of imprisonment,
13 however long. Death, in its finality, differs more from life imprisonment than a 100-year
14 prison term differs from one of only a year or two." *Woodson v. North Carolina*, 428
15 U.S. 280, 305 (1976). As a result, the United States Constitution requires that
16 "extraordinary measures [be taken] to insure that the [accused] is afforded process that
17 will guarantee, as much as is humanly possible, that [a sentence of death not be] imposed
18 out of whim, passion, prejudice, or mistake." *Caldwell v. Mississippi*, 472 U.S. 320, 329
19 n.2 (1985) (quoting *Eddings v. Oklahoma*, 455 U.S. 104, 118 (1982) (O'Connor, J.,
20 concurring)). Indeed, "[t]ime and again the [Supreme] Court has condemned procedures
21 in capital cases that might be completely acceptable in an ordinary case." *Caspari v.*
22 *Bolden*, 510 U.S. 383, 393 (1994) (quoting *Strickland v. Washington*, 466 U.S. 668, 704-
23 705 (1984) (Brennan, J., concurring in part and dissenting in part)). See also *Kyles v.*
24 *Whitley*, 514 U.S. 419, 422 (1995) (noting that the Court's "duty to search for
25 constitutional error with painstaking care is never more exacting than it is in a capital
26 case.") (quoting *Burger v. Kemp*, 483 U.S. 776, 785 (1987)). This elevated level of due
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1 process applies both to the guilt and penalty phases of the case. *Beck v. Alabama*, 447
2 U.S. 625, 638 (1980).

3 **Conclusion**

4 Defendant Steven DeMocker, by and through counsel, hereby requests that this
5 Court prohibit the State from offering testimony from John B. Hoang, Sergeant D.
6 Winslow, Detective T. Kennedy, Commander S. Mascher, and Eric Gilkerson.

7 DATED this 9th day of April, 2010.

8 By: 

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17 Attorneys for Defendant

18 **ORIGINAL** of the foregoing filed
19 this 9th day of April, 2010, with:

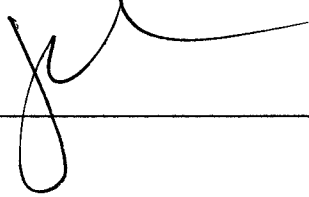
20 Jeanne Hicks
21 Clerk of the Court
22 Yavapai County Superior Court
23 120 S. Cortez
24 Prescott, AZ 86303

25 **COPIES** of the foregoing hand delivered this
26 this 9th day of April, 2010, to:

27 The Hon. Thomas B. Lindberg
28 Judge of the Superior Court
Division Six
120 S. Cortez
Prescott, AZ 86303

1 Joseph C. Butner, Esq.
2 Prescott Courthouse basket

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A handwritten signature in black ink, appearing to read 'J. C. Butner', is written over a horizontal line. The signature is stylized with a large loop at the bottom and a long horizontal stroke extending to the right.

Solving the Problems That Plague the Forensic Science Community

The Honorable Harry T. Edwards
Senior Circuit Judge and Chief Judge Emeritus
United States Court of Appeals for the D.C. Circuit
and

Visiting Professor of Law
New York University School of Law
and

Co-Chair, Committee on Identifying the Needs of the Forensic Science Community
The National Academy of Sciences

Keynote Address at Conference on

***Forensic Science for the 21st Century:
The National Academy of Sciences Report and Beyond***

Sponsored by
Center for the Study of Law, Science, & Technology
Sandra Day O'Connor College of Law
Arizona State University
Tempe, Arizona

April 3, 2009

On February 18, 2009, after more than two years of work, the Committee on Identifying the Needs of the Forensic Science Community at the National Academy of Sciences issued a report entitled, "Strengthening Forensic Science in the United States: A Path Forward." I had the privilege of serving as co-chair of the committee, which was composed of a diverse and talented group of professionals, some expert in various forensic science disciplines, others in law, some in higher education, and others in different fields of science, engineering, and medicine. It was gratifying to work with my co-chair, Dr. Constantine Gatsonis, the Director of the Center for Statistical Sciences at Brown University, and with the other wise and dedicated members of the committee.

Rather than merely summarizing the report, I would like to focus on some of its nuances and the challenges that it poses. My vantage point is that of a federal judge who has served on the bench for nearly 30 years, with the added perspective of a co-chair of a committee that has just spent 26 months studying the forensic science community. I would like to take this occasion to offer some thoughts on the crucial issues raised by the report.

With the benefit of hindsight, I can now say that the *substance* of the committee's report really was not hard to write. Tedious? Yes. Time consuming? Yes. But not really difficult. Why? Because, as the good professionals in the field have known for some time, the forensic science community is plagued by serious problems. The impetus for our committee's report came in 2005, when Congress – at the urging of the Consortium of Forensic Science Organizations (representing professionals in the forensic science community) – passed legislation directing the Academy to create an independent committee to study the forensic science community. In other words, Congress passed the legislation in response to a *call for help* from forensic professionals who understood the problems. In retrospect, I now realize that a principal part of the committee's assignment was to document what the professionals and a number of commentators already knew – namely, that the problems that afflict the forensic science community are serious and they cannot be cured without significant congressional action.

The committee spent an enormous amount of time listening to testimony from and reviewing materials published by countless experts, including forensic science practitioners, heads of public and private laboratories, directors of medical examiner and coroner offices, scientists, scholars, educators, government officials, members of the legal profession, and law enforcement officials. Not only were we trying to understand how the forensic science disciplines operate, we were also trying to determine the extent to which there is any peer-reviewed, scientific research to support the validity and reliability of existing forensic disciplines; in particular, we were looking for scientific studies that address the level of accuracy of forensic disciplines that rely on subjective assessments of matching characteristics. We invited experts in each discipline to refer us to any such research; however, apart from the materials on nuclear and mitochondrial DNA and drug analysis, we received little in the way of compelling scientific research assessing the accuracy of forensic disciplines.

When it came time to write the report, the committee had to summon its collective skills to "tell the truth" about what we had found, even as we knew that we would face resistance from some institutions that have an interest in forestalling change. We also knew that we would face disbelief from CSI addicts who naively assume that the forensic disciplines and practitioners are infallible.

Our aim was to write a credible story – measured and thoughtful, but compelling. We could not be seen to have any “axes to grind.”

Finally, we hoped that, because of the importance of the subject, the report would receive widespread attention. It did. The vast media coverage of the report has generated serious attention, concern, and discussion. And, to date, there have been two hearings on the Hill to consider the report’s recommendations – one in the Senate and one in the House – with the promise of more to come.

The foundation for change has been laid. So now what?

I started this project with no preconceived views about the forensic science community. Rather, I simply assumed, as I suspect many of my judicial colleagues do, that forensic science disciplines typically are well-grounded in scientific methodology and that crime laboratories and forensic science practitioners follow proven practices that ensure the validity and reliability of forensic evidence offered in court. I was surprisingly mistaken in what I assumed. The truth is that the manner in which forensic evidence is presented on television – as invariably valid and reliable – does not correspond with reality.

There are scores of talented and dedicated people in the forensic science community, and the work that they perform is very important. However, the quality of practice in forensic disciplines varies greatly. And this work often suffers greatly, because of

- the paucity of scientific research to confirm the validity and reliability of forensic disciplines and establish quantifiable measures of uncertainty in the conclusions of forensic analyses;
- the paucity of research programs on human observer bias and sources of human error in forensic examinations;
- the absence of scientific and applied research focused on new technology and innovation;
- the lack of autonomy of crime laboratories,
- the absence of rigorous, mandatory certification requirements for practitioners;
- the absence of uniform, mandatory accreditation programs for laboratories;
- the failure to adhere to robust performance standards;
- the failure of forensic experts to use standard terminology in reporting on and testifying about the results of forensic science investigations;

- * the lack of effective oversight; and
- * a gross shortage of adequate training and continuing education of practitioners.

These were the principal findings of the committee. Unsurprisingly, our principal recommendations are designed to address these specific problems.

In my written statement to the Senate Judiciary Committee, I cited a few examples of the problems uncovered by our committee underscoring the needs of the forensic science community. Let me digress for a moment here to recite these examples. They are telling.

1. My first example concerned **Subjective Interpretations, Exaggerated Testimony, and a Paucity of Research**. Often in criminal prosecutions and civil litigation, forensic evidence is offered to support a claim that an evidentiary specimen is a "match" to a particular individual or other source. With the exception of nuclear DNA analysis, however, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source. Yet, for years, the courts have been led to believe that disciplines such as fingerprinting stand on par with DNA analysis. For example, in a decision issued by the Seventh Circuit, the court reported that an FBI fingerprint expert had "testified that the error rate for fingerprint comparison is essentially zero." In a later decision issued by the Fourth Circuit, that court cited the Seventh Circuit opinion approvingly, noting that an expert from the FBI had testified that the error rate for fingerprint comparison was "essentially zero."

The committee's report rejects as scientifically implausible any claims that fingerprint analyses have "zero error rates." There is no such concept as a zero error rate in good scientific analysis. Yet, for years the courts were led to believe otherwise. Of even greater concern is the dearth of scientific research to establish limits of performance, to ascertain quantifiable measures of uncertainty, and to address the impact of the sources of variability and potential bias in fingerprint examinations and in other forensic disciplines that rely on subjective assessments of matching characteristics.

One of the most telling moments for me during the committee's hearings occurred when I heard the testimony of an expert fingerprint analyst who is a member of the Scientific Working Group on Friction Ridge Analysis, Study and Technology. At one point in his testimony, he was asked about the scientific basis for determining a match in prints in a situation when the examiner has only a partial or smudged print. The expert did not hesitate in conceding that the research has yet to be done.

When there is no good scientific basis to support a forensic discipline, and when experts cannot quantify certainty and uncertainty, the testimony that experts offer is too often exaggerated (as with the claims of "zero error rates"). Sometimes testimony is even fabricated. Some of you

may have seen the recent story in the *San Jose Mercury News* reporting that, for years, San Jose police never told anyone when fingerprint technicians could not agree about whether a suspect's prints matched those taken from the crime scene. Instead, the police department's Central Identification Unit generated a report indicating that two technicians agreed that the suspect's prints had been positively identified, while omitting that a third technician dissented. Stories like this are disheartening, to say the least.

Another serious concern is contextual bias. Some studies have demonstrated that identification decisions on the same fingerprint can change solely by presenting the print in a different context. In one study, for example, fingerprint examiners were asked to analyze fingerprints that, unknown to them, they had analyzed previously in their careers. Contextual biasing was introduced – that is, examiners were told that the “suspect confessed to the crime” or the “suspect was in police custody at the time of the crime.” In one-third of the examinations that included contextual manipulation, the examiners reached conclusions that were different from the results they had previously reached.

2. My second example involved **Inconsistent Practices in Crime Laboratories**. In recent years, the integrity of crime laboratories has been called into question, with some heavily publicized cases highlighting (1) unqualified practitioners, (2) sometimes lax standards that have generated questionable or fraudulent evidence, and (3) the absence of quality control measures to detect questionable evidence. One notorious case, involving the Houston crime laboratory, highlights the sometimes blatant lack of proper education and training of forensic examiners. In the Houston case, an audit by the Texas Department of Public Safety confirmed serious inadequacies in the laboratory's procedures, including routine failure to run essential scientific controls, failure to take adequate measures to prevent contamination of samples, failure to adequately document work performed and results obtained, and routine failure to follow correct procedures for computing statistical frequencies.

This past fall, it was reported that the Detroit police crime lab was shut down after an outside audit found errors in evidence used to prosecute cases involving murder and other crimes. The audit uncovered erroneous or false findings in 10% of 200 random cases, subpar quality control compliance, and a “shocking level of incompetence” in the lab. It was also reported that the chief of the police crime lab in Baltimore was fired after it was revealed that DNA samples had been contaminated by lab employees.

3. My third example involved **Scientific Working Groups or SWGs**. There are a number of SWGs for forensic disciplines. For example, the SWGDRUG group recommends minimum standards for the forensic examination of seized drugs. The chair of SWGDRUG testified before the committee and explained how his SWG group operates. His answers to my questions indicated that some SWG standards undoubtedly incorporate good technical protocols that should enhance forensic science analyses; however, his testimony also confirmed that, as a general matter, SWGs are of questionable value. Why? Because

- SWG committees meet irregularly and have no clear or regular sources of funding.

- There are no clear standards in place to determine who gains membership on SWG committees.
- Neither SWGs nor their recommendations are mandated by any federal or state law or regulation.
- SWG recommendations are not enforceable.
- A number of SWG guidelines are too general and vague to be of any great practical use.
- SWG committees have no way of knowing whether state or local agencies even endorse the standards.
- Complaints are not filed when a practitioner violates a SWG standard.
- SWG committees do not attempt to measure the impact of their standards by formal study or survey.

In other words, even if it is true that some SWG standards make sense and might result in good practice, there is nothing to indicate that the standards are routinely followed and enforced in a way to ensure best practices in the forensic science community.

4. The last example that I offered involved The Coroner System. In 1928, the National Academy of Sciences strongly recommended that the coroner system should be abolished in the United States. In 2008, the committee determined that 28 states still operate with coroners, instead of medical examiners. Less than one-third of the states with coroners require training for those who hold the positions. Recently, in Indiana, a 17-year-old high school senior was appointed a deputy coroner. Obviously, the teenager was not a trained physician; and, like many coroners, she was not qualified to conduct an autopsy or make sophisticated assessments of the dead for disease, injury, medical history, and laboratory studies – assessments that we need from qualified medical examiners and pathologists in the wake of homicides, natural disasters, suicides, and breaches of homeland security.

Problems such as these highlight some glaring weaknesses in the forensic science community. It is worth noting here that the committee's report does not say that disciplines such as fingerprint analyses have no uses – rather, it raises important questions about the absence of research to support the validity and reliability of a number of forensic disciplines. For example, the report notes the paucity of scientific studies addressing the accuracy of fingerprint analyses, especially in cases in which there are only partial or smudged prints. The absence of research can have unfortunate consequences in cases in which an examiner is looking at something other than a clear, clean, full print.

The report does not mean to suggest that fingerprint analysis must stand on par with DNA. Indeed, the report does not mean to say that DNA analyses are flawless. Rather, the report notes that DNA analysis has had a level of scientific study and development that should be done for other disciplines (such as fingerprint identifications) that are used to support individualization claims. In other words, each discipline/modality should be evaluated scientifically in order to assess its accuracy using current technical capabilities and to identify areas in which new research and development is needed.

[After I presented this paper, I was told that the National Institute of Justice has recently funded "foundational" studies to assess the accuracy of fingerprint identifications, and also that a task force recently has been established to consider the problem of contextual bias in forensic examinations. But I was also told that we have a long way to go before meaningful studies will be completed to determine the scientific basis for determining a match in prints in situations when an examiner has only a partial or smudged print.]

When I think about the problems facing the forensic science community, I now focus on four significant issues: (1) law, (2) science, (3) practice, and (4) federal oversight. I would like to reflect with you a bit on these four issues.

LAW. The work of the forensic science community is critically important in our system of criminal justice. Forensic science experts and evidence are routinely used in the service of the criminal justice system. So it matters a great deal whether an expert is qualified to testify about forensic evidence and whether the evidence is sufficiently reliable to merit a fact finder's reliance on the truth that it purports to support.

Unfortunately, the adversarial approach to the submission of evidence in court is not well suited to the task of finding "scientific truth." The judicial system is encumbered by, among other things, judges, lawyers, and jurors who generally lack the scientific expertise necessary to comprehend and evaluate forensic evidence in an informed manner; defense attorneys who often do not have the resources to challenge prosecutors' forensic experts; trial judges (sitting alone) who must decide evidentiary issues without the benefit of judicial colleagues and often with little time for extensive research and reflection; and very limited appellate review of trial court rulings admitting disputed forensic evidence.

Furthermore, the judicial system embodies a case-by-case adjudicatory approach that is not well suited to address the systematic problems in many of the various forensic science disciplines. I have heard some good lawyers suggest that defense attorneys, armed with our committee's report, will now be better able to challenge forensic evidence in court. Maybe. It is certainly possible that the courts will take into account the report's findings when considering the admissibility of forensic evidence in a particular case. But admissibility under section 702 of the Federal Rules of Evidence is a "flexible" standard and trial judges have great discretion in deciding whether to admit evidence.

More important, however, is the reality that the question whether forensic evidence in a particular case is admissible is not coterminous with the question whether there are studies confirming the scientific validity and reliability of a forensic science discipline. Individual defendants may prevail in particular cases, but this will not remedy the paucity of good scientific research supporting the forensic disciplines, at least not in the short term. If enough individual prosecutions fail, this may force law enforcement agencies to insist on the necessary scientific research. But relying on the judicial system in this way may take too much time to bring about the dramatic reforms that are needed to fix the problems in the forensic science community.

In an article entitled *Expert evidence, partisanship, and epistemic competence*, pondering the conjunction between law and forensic science, Professor Jennifer Mnookin has aptly observed that,

so long as we have our adversarial system in much its present form, we are inevitably going to be stuck with approaches to expert evidence that are imperfect, conceptually unsatisfying, and awkward. It may well be that the real lesson is this: those who believe that we might ever fully resolve – rather than imperfectly manage – the deep structural tensions surrounding both partisanship and epistemic competence that permeate the use of scientific evidence within our legal system are almost certainly destined for disappointment.

I am of the view that judicial review, by itself, will not cure the infirmities of the forensic science community. Good science includes two attributes that the law needs from the forensic disciplines: (1) valid and reliable methodologies that enable the accurate analysis of evidence and reporting of results and (2) practices that minimize the risk of results being dependent on subjective judgments or tainted by error or the threat of bias. Because of the many problems presently faced by the forensic science community and the inherent limitations of the judicial system, the forensic science community as it is now constituted cannot consistently serve the judicial system as well as it might. And lawyers and judges should not be counted on to fix the *science* problem. What we need is for the forensic science community to improve so that it better serves the needs of justice.

SCIENCE. I think the most important part of our committee's report is its call for real science to support the forensic disciplines. Simply increasing the number of staff within existing crime laboratories and medical examiners' offices will not solve the principal problems of the forensic science community. What is needed is interdisciplinary, peer-reviewed, scientific research to determine the validity and reliability of existing disciplines, and to achieve technological advancements.

And we need educational programs – serious programs at good universities – in which we not only train undergraduates in existing forensic practices, but in which we entice top scholars in the physical and life sciences, along with strong students in PhD programs, to pursue scientific research in forensic science. If universities would devote the same time and effort to research related to the forensic science disciplines that was given to research in support of DNA, this would

move us a long way toward meaningful reform. Can universities be enticed? Of course they can. All it takes is money for research programs and fellowships. Universities rarely turn away from research money.

I am also convinced that the forensic science community will never change for the better unless certain cultural habits are broken. One of the worst habits that I have seen is the unfathomable willingness among some professionals in the forensic science community to stick with the idea that a forensic science practitioner is bound to get better with practice and experience. I heard this refrain all too often in testimony presented to the committee. Surely we can set our aspirations higher than this.

The forensic science community needs talented people who are hungry to learn whether there is any "science" in the forensic disciplines; who crave to establish quantifiable measures of certainty and uncertainty in their field; who insist upon knowing the extent to which there may be human observer bias and sources of human error in forensic examinations; and who are determined to pursue scientific innovation. This is all about adding a culture of "science" to the forensic science community. From what I have seen, we still have a long way to go.

PRACTICE. There is another crucially important point that pervades the committee's report. The point is this: The solution to the problem is not to commit more money and people to do things as they are now being done. We need to adopt and enforce better and consistent practices in the forensic science community.

As the report details, we need to upgrade organizational structures; establish better education and training programs for practitioners; adopt uniform and enforceable best practices, quality controls, and proficiency testing; require *mandatory* certification and accreditation programs; establish standard terminology to be used by forensic practitioners when they report on and testify about the results of forensic investigations; and ensure operational autonomy for forensic laboratories. This overhaul of the system is essential if we expect forensic practitioners to serve the goals of justice. And these practice reforms *must* occur whether or not a new federal agency is created to oversee the forensic science community.

There is an inherent dilemma in the report, one that we really do not address. Better science to determine the validity and reliability of forensic disciplines will take time. So there is a question as to how we can ensure better practices before we know whether a particular forensic discipline is founded on good science and produces accurate results. For example, if we cannot quantify measures of uncertainty and we do not know sources of variability, how can we establish best practices? The big questions are not whether we should require mandatory certification of practitioners and mandatory accreditation of labs, but by whom and on what terms.

One answer, I guess, is that not all "classification" practices in the forensic science community are bad. Although no discipline matches DNA in its capacity to consistently

demonstrate a connection between evidence and a specific individual or source, there appear to be some disciplines that can be used to assess whether a particular piece of evidence is associated with a particular source class. An example might be a paint mark left at a crime scene is consistent with a particular paint sample in a database, from which one can infer the model or production year of a vehicle that could have left the mark. So we cannot throw out the baby with the bath water as we work to improve the science underlying forensic practice.

As scientific studies are being conducted, there are three recommendations relating to forensic *practice* that I am sure will have salutary effects, even in the short term. The first is the committee's recommendation requiring forensic experts to use standardized, honest, and clear terminology in reporting on and testifying about the results of forensic science investigations. In Professor Mnookin's article, *The validity of latent fingerprint identification: Confessions of a fingerprinting moderate*, she offers a very useful critique that highlights the problems of exaggerated expert testimony:

At present, fingerprint examiners typically testify in the language of absolute certainty. [They] make only . . . "positive" or "absolute" identifications – essentially making the claim that they have matched the latent print to the one and only person in the entire world whose fingertip could have produced it. In fact, if a fingerprint examiner testifies on her own initiative that a match is merely "likely" or "possible" or "credible," rather than certain, she could possibly be subject to disciplinary sanction! Given the general lack of validity testing for fingerprinting; the relative dearth of difficult proficiency tests; the lack of a statistically valid model of fingerprinting; and the lack of validated standards for declaring a match, such claims of absolute, certain confidence in identification are unjustified, the product of hubris more than established knowledge.

This critique could be applied to several forensic disciplines that rely on subjective assessments of matching characteristics. When their testimony is admitted, forensic experts should offer nothing more in the way of evidence than what they actually know, leaving it to the jury or judge to weigh the evidence offered against the other evidence that is presented in a case. My concern is that some forensic practitioners may not know what they do not know about the limits of their discipline; they will have to be taught this so they can be circumspect in their testimony.

Relatedly, the committee also recommended the adoption of model laboratory reports with specifications regarding the minimum information that should be included in a lab report. This recommendation is intended to facilitate the ability of lawyers, judges, and jurors to better comprehend the limits of forensic evidence that is offered in a case. Obviously, this is crucially important.

The third recommendation relating to forensic practice that I believe will have salutary effects, even in the short term, is the recommendation calling for the removal of all public forensic laboratories and facilities from the administrative control of law enforcement agencies or prosecutors' offices. In other words, the report recommends administrative autonomy for laboratories in their performance of scientific work. This is a controversial recommendation,

because it raises political issues over the control of crime labs and their funding. The argument is made that it is easier for law enforcement units to secure appropriations to support the work of crime labs than it would be for labs to do so on their own. Thus, it is claimed that labs must stay under the control of law enforcement in order to be properly funded. In my view, this is a dubious argument. Law enforcement units would be less effective if they did not have the support of crime labs. Therefore, no thoughtful directors of law enforcement units will oppose adequate funding for crime labs. This issue is not about funding; it is about control.

The report does not mean to suggest that, say, the Director of the FBI or a State Attorney General could not act to prioritize the cases that they send to crime labs, only that the scientific work should be under the sole control of the scientists, not law enforcement officers. Nor does the report mean to suggest that law enforcement officers and prosecutors cannot communicate with crime lab officials regarding pending cases. What the report recommends is that forensic practitioners working in crime laboratories should operate autonomously in performing their scientific analyses and in writing reports that state their findings.

As the report makes clear, the simple point here is that forensic scientists should function independently of law enforcement administrators. The best science is conducted in a scientific setting as opposed to a law enforcement setting. Because forensic practitioners often are driven in their work by a need to answer a particular question related to the issues of a particular case, they sometimes face pressure to sacrifice appropriate methodology for the sake of expediency or for other nonscientific reasons. This is not as it ought to be. Such pressures inhibit good science and ultimately adversely affect the credibility of the field.

FEDERAL OVERSIGHT. In thinking about how best to address the problems that now encumber the forensic science community, the committee first considered whether a governing entity could be established within an existing federal agency. We concluded that no existing agency has the capacity or appropriate mission to take on the roles and responsibilities needed to govern and improve the forensic science community. The Committee considered the National Institute of Standards and Technology ("NIST"), for example, but rejected this idea. NIST is a non-regulatory federal agency within the Department of Commerce and its laboratories conduct research in a wide variety of physical and engineering sciences. However, NIST has little experience in establishing and running an extramural research program; it has never assumed sweeping responsibilities of the sort that should be assigned to any entity that is authorized to oversee the forensic science community (including reporting, codes of ethics, accreditation, professional certification, and incentives for their widespread adoption in state and local agencies); it has no experience in running a comprehensive regulatory program; and it has no meaningful expertise in the legal issues affecting the forensic science community.

There was also a strong consensus in the committee that no unit within the Department of Justice would be an appropriate location for a new entity governing the forensic science community. DOJ's principal and important mission is to enforce the law and defend the interests of the United

States according to the law, not to pursue serious scientific research and education. The entity that is established to govern the forensic science community cannot be principally beholden to law enforcement. The potential for conflicts of interest between the needs of law enforcement and the broader needs of forensic science are too great.

The committee concluded that what is needed to support and oversee the forensic science community is a new, strong, and independent entity that can take on the tasks that would be assigned to it in a manner that is as objective and free of bias as possible – one with no ties to the past and with the authority and resources to implement a fresh agenda designed to address the problems found by the committee and discussed in the report.

With these considerations in mind, the committee's principal recommendation is that Congress should authorize and fund the creation of an independent federal entity, the National Institute of Forensic Science, or NIFS. This new agency should have a full-time administrator and an advisory board with members who are experts in research and education, the physical and life sciences, forensic science disciplines, forensic pathology, engineering, information technology, measurements and standards, testing and evaluation, law, national security, and public policy.

A number of commentators have questioned whether, especially in a time of economic duress, Congress will create a new federal entity. My own view is that we will be best served by a new, strong, and independent entity, with no ties to the past dysfunctions of the forensic science community. When I last counted, there were a significant number of independent federal agencies – this is not a novel idea. Metaphorically, I ask: Why build an addition to a house that is not well situated to accommodate your best plans, when you can build a new house whose design fits your needs?

Furthermore, although the committee was unable to estimate the cost of a new entity, it is clear to me that costs can be contained as necessary when NIFS is first established. The new agency will have plenty of resources to draw on when it first gets started – *e.g.*, ASCLD/LAB for advice on accreditation; SWGs for advice on technical protocols; officials in organizations like the American Academy of Forensic Sciences who know the best professionals in the field; and strong legal scholars who have carefully studied the conjunction between law and forensic science for years. With the right people in charge of the operation – people of the caliber of John Holdren, the new director of the White House Office of Science & Technology Policy – and with adequate funding to promote important programs, a new entity like NIFS will effectively promote positive change in the forensic science community.

As the committee's report makes clear, what is needed is a massive overhaul of the forensic science system in the United States, both to improve the scientific research supporting the disciplines and to improve the practices of the forensic science community. And the creation of NIFS is the keystone for such an overhaul. I do not believe that truly meaningful reforms will be uniformly adopted by the forensic science community without the support and oversight of an entity like NIFS. The committee's report surely will promote some changes in current forensic practices, but more is needed. I hope that those who now control the destiny of this enterprise will have the

resolve to take the necessary steps to put into effect the full package of reforms that we so badly need.

PRINCIPAL SOURCE

Committee on Identifying the Needs of the Forensic Science Community, *Strengthening Forensic Science in the United States: A Path Forward* (National Academy of Sciences 2009), available at <http://www8.nationalacademies.org/cp/projectview.aspx?key=48741>

**UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MASSACHUSETTS**

GERTNER, D.J.

PROCEDURAL ORDER: TRACE EVIDENCE

March 8, 2010

In the light of the 2009 report to Congress of a Committee of the National Academy of Sciences', NATIONAL RESEARCH COUNCIL COMMITTEE ON IDENTIFYING THE NEEDS OF THE FORENSIC SCIENCE COMMUNITY, STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (2009) [hereinafter cited as NRC 2009], this Court orders the following:

At or prior to the pretrial conference, parties are **ORDERED** to:

- a) identify whether or not they seek to introduce trace evidence;
- b) state whether or not either party seeks a Daubert/Kumho hearing prior to trial;

and,

- c) state the witnesses required for the Daubert/Kumho hearing and the exhibits that the parties seek to admit.

No later than two months before the pretrial conference, counsel must also indicate:

- a) if counsel is appointed, whether expert funds are sought to deal with the trace evidence;
- b) whether all discovery obligations under the Local Rules have been met or whether additional discovery required.

The NRC 2009 report, building on the writing of academic commentators, called for sweeping changes in the presentation and production of evidence of identification involving fingerprints, bullets, handwriting, and other trace evidence. The report noted

that the forensic science disciplines exhibit wide variability with regard to techniques, methodologies, reliability, level of error, research, general acceptability, and published material. . . . Many

of the processes used in the forensic science disciplines are . . . not based on a body of knowledge that recognizes the underlying limitations of the scientific principles and methodologies for problem solving and discovery. . . .[S]ome of these activities [encompassed by the term "forensic science"] might not have a well developed research base, are not informed by scientific knowledge, or are not developed within the culture of science.

NRC 2009 - 1-3

While the report does not speak to admissibility or inadmissibility in a given case, it raised profound questions that need to be carefully examined in every case prior to trial: "1) the extent to which a particular forensic discipline is founded on a reliable scientific methodology that gives it the capacity to accurately analyze evidence and report findings and (2) the extent to which practitioners in a particular forensic discipline rely on human interpretation that could be tainted by error, the threat of bias, or the absence of sound operational procedures and robust performance standards." NRC 2009 S- 7.

The Report noted that these fundamental questions have not been "satisfactorily dealt with in judicial decisions pertaining to the admissibility" of evidence. *Id.* To be sure, the court's treatment of this evidence relates directly to the adequacy of counsel's treatment. *See, e.g., Sturgeon v. Quarterman*, 615 F. Supp. 2d 546, 572-573 (S.D. Tex. 2009) (defense counsel's failure to prepare a witness to testify about the unreliability of eyewitness identifications prevented defendant from presenting testimony that would have called into question the only direct evidence against him and was ineffective assistance of counsel warranting habeas relief); *Richter v. Hickman*, 578 F.3d 944, 946-947 (9th Cir. Cal. 2009) (en banc) (defense counsel 's failure to conduct an adequate forensic investigation with respect to blood spatter, serology, and pathology comprised ineffective assistance of counsel warranting habeas relief). *See also United*

States v. Pena, 586 F. 3d 105 (1st Cir. 2009 affirmed) (the court's decision not to hold a Daubert hearing on fingerprint testimony where counsel offered no expert or evidence. affirmed

In the past, the admissibility of this kind of evidence was effectively presumed, largely because of its pedigree -- the fact that it had been admitted for decades. As such, counsel rarely challenged it, and if it were challenged, it was rarely excluded or limited. But see United States v. Hines, 55 F. Supp. 2d 62 (D. Mass. 1999) and United States v. Green, 405 F. Supp. 2d 104 (D. Mass. 2005). .

The NAS report suggests a different calculus -- that admissibility of such evidence ought not to be presumed; that it has to be carefully examined in each case, and tested in the light of the NAS concerns, the concerns of Daubert/Kumho case law, and Rule 702 of the Federal Rules of Evidence. This order is entered to accomplish that end.

SO ORDERED.

Date: March 8, 2010

/s/ Nancy Gertner
NANCY GERTNER, U.S.D.C.